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The Status of
Bootherium brazosis

BY

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—Jane Sullivan, Editor

The Status of *Bootherium brazosis*

by CLAYTON E. RAY[°]

Abstract—The fossil musk ox *Bootherium brazosis* Hesse 1942 was distinguished as a species largely on the basis of spurious characters founded upon the misorientation of the type specimen. Correct orientation reveals that *B. brazosis* is conspecific with and a junior synonym of *B. sargenti* Gidley 1908.

INTRODUCTION

The ovibovine species *Bootherium brazosis* was described by Curtis J. Hesse (1942) on the basis of a partial cranial roof with the stump of the left horn core and somewhat more of the right horn core preserved. The specimen, Texas A & M University collection (T. A. M. C.) No. 2553, was collected from a bar below the eroding banks of the Brazos River at Pitt's Bridge, Brazos County, Texas (see Peterson, 1946, fig. 5, for this locality).

ACKNOWLEDGMENTS

Through the cooperation of Richard J. Baldauf and W. B. Davis and with the aid of John A. Wilson and Nicholas Hotton III, I have had the opportunity recently to examine T. A. M. C. 2553 and to compare it with relevant specimens, in part made available by Weldon D. Frankforter, James A. Jensen, and Horace G. Richards. The present resultant notes have been read critically by Claude W. Hibbard and John A. Wilson. I wish to thank all of these people for their assistance.

DISCUSSION

Close reading of the type description (Hesse, 1942, pp. 82, 85) with the specimen at hand confirms the suspicion that Hesse misoriented it, turning it end for end. He indicated, for example, that the specimen retained "the base of the right horn core and about two-thirds of the left," whereas the right is in fact the longer. Also, according to Hesse, "just back of the bases of the horn cores [the cranial roof] is 63 mm. thick, and while there is some suggestion of thinning anteriorly this roof is approximately 50 mm. thick in the region of the orbits." Actually, the cranial roof is about 63 mm. thick in the midline on the frontals anterior to the bases of the horn cores, and thins posteriorly to 50 mm. in the region of the nuchal crest (not preserved). Further, "in the

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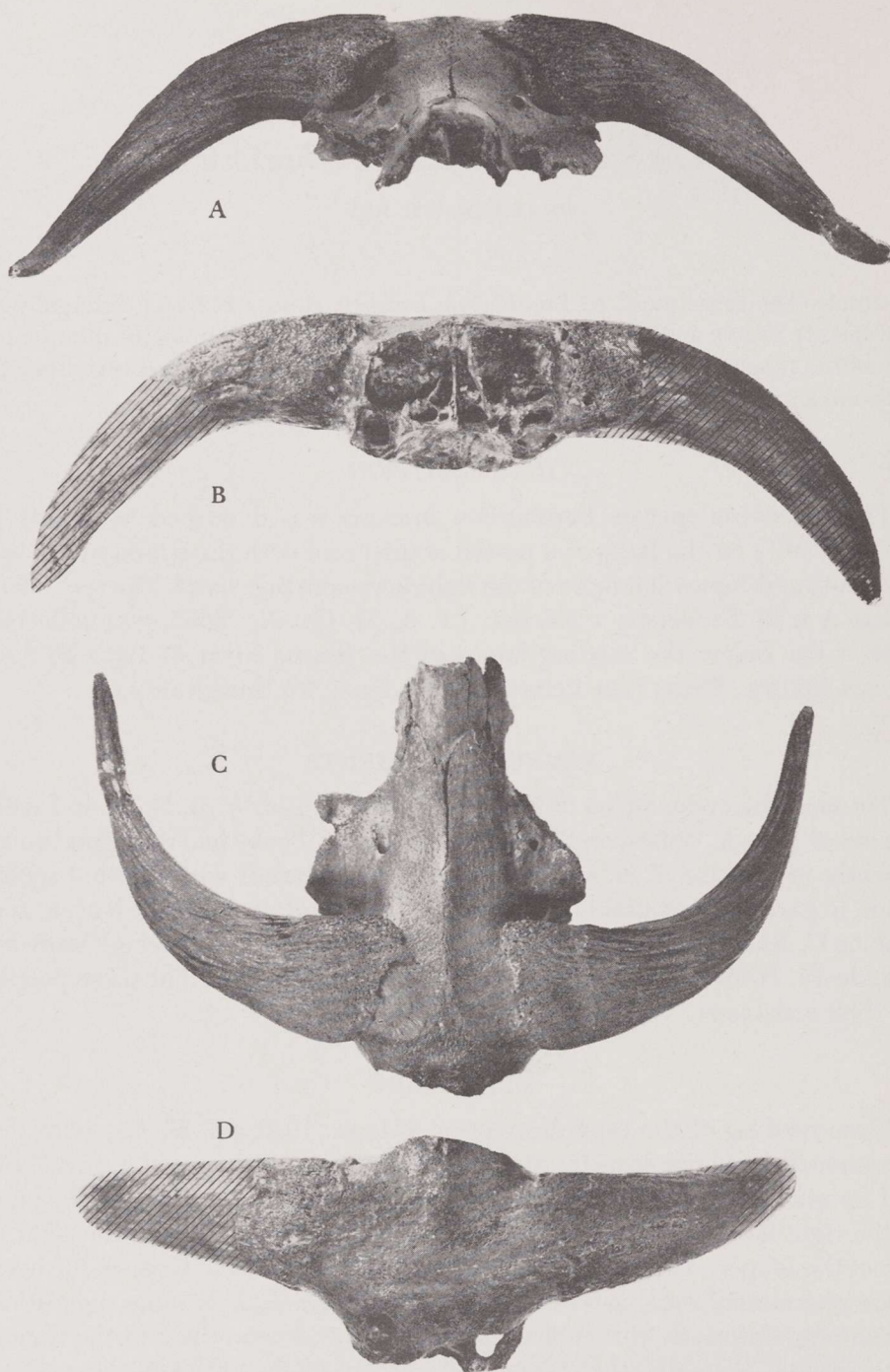


Fig. 1. *Bootherium sargenti*, G.R.P.M. 11 423 3101, type specimen, in anterior (A) and dorsal (C) aspects, and *B. brazosis*, T.A.M.C. 2553, type specimen, in anterior (B) and dorsal (D) aspects. Hatched areas indicate improbable reconstruction of horn cores fashioned subsequent to Hesse's original description. Approximately $\times 1/5$.

mid-line of the posterior part of the specimen is a wide but very low ridge, this feature also is readily seen in Allen's [1913] figure (p. 211, fig. 45) of the genotype." This ridge is in fact dorsal, and corresponds well to that in *Bootherium sargenti* and *Bootherium appalachicolus* (see Ray, 1966, fig. 1). The supposed median posterodorsal ridge attributed by Hesse to *B. bombifrons* on the basis of Allen's figure is the left hand member of a symmetrical pair of laterally situated low ridges especially prominent in the type specimen of *B. bombifrons*. No specimen of *Bootherium* known to me has a median ridge in this area. Thus, from the foregoing, it is possible to determine how Hesse proposed to orient the specimen.

The necessity of reversing the orientation of the cranial fragment is apparent from many details of its general conformation in comparison to other specimens of *Bootherium* (Figs. 1 and 2). Among the key characters are: (1) the crenulations of the endocranial surface; (2) the position of the mid-dorsal ridge; and (3) the asymmetry of the large vacuities posteriorly with transgression across the sagittal plane as compared to retention of the inter-frontal suture and some bilateral symmetry of vacuities anteriorly.

Reorientation of the specimen makes possible meaningful evaluation of its characters. Direct comparison with the types of all described species of *Bootherium* as well as with several referred specimens confirms that *B. brazosis* is indeed a member of the genus *Bootherium*, and shows that T.A.M.C. 2553 resembles most closely the type of *B. sargenti* Gidley 1908 (Grand Rapids Public Museum, G.R.P.M., no. 11 423 3101), from which it differs in no essential feature (Figs. 1 and 2), although perhaps representing a slightly larger individual.

The differences in sculpturing between the two specimens are the result of differing post mortem history. Hesse's assertion to the contrary, the type of *B. brazosis* is not well preserved at least in terms of surface detail. Thus, his statements that "the horncores themselves do not have a heavy burr . . . are not ridged or grooved and while they are somewhat rugose they are by no means as much so as *Ovibos* or *Bison*" are not meaningful. The specimen has been stream rolled and has lost virtually all of its finer surface sculpturing. Failure to make adequate allowance for the extent and nature of abrasion upon some crania of *Bootherium* in contrast to the remarkably delicate preservation of surface detail in others, notably the type of *B. sargenti*, has vitiated much comparison in the past. The type of *B. brazosis* and other water worn specimens of the genus show vestiges of this sculpturing, particularly on concave or otherwise sheltered surfaces.

Bootherium brazosis Hesse 1942 is herewith placed in the junior synonymy of *B. sargenti* Gidley 1908. As already pointed out (Ray, 1966), the ultimate taxonomic disposition of *B. sargenti* remains to be determined, but is an issue beyond the scope of the present communication. It seems likely that Hesse himself recognized his error in interpreting T.A.M.C. 2553, for al-



Fig. 2. *Bootherium sargenti*, G.R.P.M. 11 423 3101, type specimen, in posterior (A) and ventral (C) aspects, and *B. brazosis*, T.A.M.C. 2553, type specimen, in posterior (B) and ventral (D) aspects. Hatched areas indicate improbable reconstruction of horn cores fashioned subsequent to Hesse's original description. Approximately $\times 1/5$.

though Peterson (1946) acknowledges "the late C. J. Hesse for assistance and advice regarding the fossil mammals" (p. 162), he does not cite Hesse's description of *B. brazosis*, but notes instead *B. bombifrons* in the Pleistocene fauna of Brazos County (p. 166).

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